Revised Pork Price and Spread Calculation Procedures

by Lawrence A. Duewer

Only a brief explanation of revised procedures and the assumptions and logic behind these revisions is provided here. In a few months a more complete presentation will be provided in bulletin form. The bulletin will include not only a more complete description of procedures and a comparison of the overlap period, but also a set of historical data made consistent with revised procedures.

The Economic Research Service has updated its procedures for calculating pork price spreads. The procedures were last revised in 1978. The update was necessitated by the many changes that have occurred in the hog industry over the past two decades, including changes in hog genetics (larger and leaner animals), hog processing, pork merchandising, and data availability. These industry trends spurred USDA's Agricultural Marketing Service (AMS) to alter its reporting of wholesale pork prices in 1998 to reflect the prevalence of closer trimmed and film wrapped cuts. AMS also adjusted its hog price reporting for 1999 and earlier. In addition, the Bureau of Labor Statistics (BLS) now reports prices for a wider range of retail cuts and has made procedural changes beginning with its January 1998 data.

Prices increase at all levels in the revised series due to the move to a higher quality (leaner) hog and closer trimmed pork products, including more boneless cuts. The farm-to-retail price spread is only slightly larger, while the wholesale-to-retail portion of the spread grows larger and the farm-to-wholesale portion decreases.

Description of Spreads

Price spreads are differences between values at selected levels within the market channel. Three price levels in the pork marketing channel are calculated: 1) live animal price paid by the packer to the producer; 2) wholesale (fresh and/or processed) pork price paid by the wholesaler or retailer to the packer or processor; and 3) retail pork price paid by the consumer to the retailer. Each of these prices is adjusted to represent an equivalent amount and quality of pork product at each level.

USDA pork price spreads are calculated on the basis of one pound of pork purchased or sold at retail. This computation includes an adjustment at the producer level to remove the value contributed by byproducts (head, offals, etc.). Spreads are calculated as the differences between these values. They do not represent margins, profits, or losses for individual firms or groups of firms. Rather, they provide a perspective, over time, on differences in prices at various levels in the marketing and distribution system. Determination of the farm, wholesale, and retail prices, as well as price adjustments needed to obtain a retail weight equivalent product, provides the data for calculating price spreads.

Price Spread Concepts

Price spreads simply indicate differences in calculated values for a *consistent* equivalent quantity and quality of product as it is successively measured at the farm, wholesale, and retail levels. *Consistent* means that the same product (for example a 51-52 percent lean hog with .80-.99 inches of backfat) is measured each month and at each marketing level. *Consistently* calculated price spreads provide an estimate of the distribution of final retail dollars among the farm, processing, and retail

segments of the marketing chain and how the distribution changes over time. As such, price spreads provide a breakout of the consumer food dollar into the farmer's share and the marketing shares *for the specified product.* Thus, these revised procedures indicate the value differences between market levels and over time for the "standard" hog with 51-52 percent lean and .80-.99 inch backfat. Estimates and comparisons do not necessarily represent an average live hog or hog carcass (which would change over time), nor do they represent the particular mix of pork cuts a retailer may sell at a given time. Calculated spreads (differences) obtained would not be meaningful if the product measured were not *consistent.*

Selection of price series used was based partly on availability as well as applicability, particularly at the retail level. However, the same series and procedures are used each month so that differences obtained are differences for a *consistent* product over time. The absolute price levels and spreads (differences) obtained are calculated to reflect values as accurately as possible, but more importantly the changes from period to period are accurate indications of changes in the market situation. Prices used at each level are for the same time period. There is a time lag involved as the hog is slaughtered, processed, and merchandised. Because the lag varies for different cuts and extent of processing, incorporating lags would only represent a set of assumptions. Therefore, all levels are priced for the same time period. BLS prices used at retail reflect the price effect of specials, but not the volume effect.

Hog Standard Selection

The particular hog characteristics selected as the standard to use at each market level and over time are from the "National Base Lean Hog Slaughter Cost Report," an AMS series that specifies a hog with 51-52 percent lean and .80-.99 inches of backfat. This hog price series is used in the contract specifications for the Live Hog Futures Contract traded on the Chicago Mercantile Exchange. The dressing percentage (74 percent) and cutout used (discussed later) will be the basis of all the price spread calculations. While not all market hogs are 51-52 percent lean, hogs have become much leaner over time and this is close to a typical hog today. Premiums and discounts are now usually based on or near this standard. Using this standard allows the price spread to value the same quality hog at each market level each month.

Hog Breakout Table for Pork Price Spreads

Table 1 provides a detailed step-by-step move from the live hog to retail cuts purchased by consumers. The brief comments that follow explain the assumptions and decisions used to obtain the various breakouts in the table. The table breaks out the selected hog into primals, subprimals, and cuts and matches these to available retail prices from BLS.

The national base lean hog carcass price for 51-52 percent lean with .80-.99 inches of backfat assumes a 74 percent dressing percentage. The price is multiplied by .74 to get the live farm or producer price. Column A of the table thus uses 74 percent of the live hog as carcass.

The wholesale value being developed will use the weights in columns G and H. The wholesale price will be for principal products (those above the 75.21-percent principal products subtotal) and leave out the cuts that normally do not go to retailers at anywhere near carcass proportions (jowls, neckbones,

Table 1-- Hog breakout from 51-52% lean hog to consumer products

	A	B	C	D	E	F	G	H	I	J	K
Primals and cuts	Percent of live hog	Percent of carcass	Conversion factor - drop primal to primals sold	Conversion factor- primals sold to whole-sale products	% product of carcass weight	Trimmings shift	Wholesale product by primal	Wholesale product by cut	Combining	Retail cuts per 100 lbs retail sales	BLS retail cut names
Hams	18.25	24.66	0.9700	0.782	18.71	-4.21	14.50				
Smoked, BI								4.40		5.85	All ham
Smoked, BO								10.10		13.42	Ham, BO, Excluding canned
Bellies	11.91	16.10	0.9750	0.750	11.77		11.77				
Bacon								11.77		15.65	Bacon, sliced
Loins	18.89	25.52	0.7914	0.935	18.88	-3.15	15.73				
Bone-in								8.62		11.46	Chops, center cut, BI
Boneless								4.81		6.40	
Other cuts								2.30			
Spareribs	3.09	4.18	0.9660	1.000	4.04		4.04	4.04			
Picnics	8.34	11.27	1.0000	0.781	8.80	-7.66	1.14				
Fresh								0.45		24.19	All other pork plus
Smoked								0.69		2.10	Valueless (fat)
Butts	7.42	10.03	0.8155	0.991	8.11	-1.15	6.96	6.96			
42% trimmings					**1.20**	4.17	5.37	5.37			
72% trimmings					**3.70**	4.34	8.04	8.04		20.88	Sausage, fresh loose
Boneless picnic						7.66	7.66	7.66			
Prin. prod. subtotal	67.90	91.76			75.21		75.21	75.21		100.00	
Jowl	1.28	1.73	0.8800	1.000	1.52		1.52	1.52			
Neckbones	1.07	1.45	1.0000	1.000	1.45		1.45	1.45			
Feet	0.80	1.08	1.0000	1.000	1.08		1.08	1.08			
Tails	0.27	0.36	1.0000	1.000	0.36		0.36	0.36			
Carcass products	71.32	96.38			79.62		79.62	79.62			
Fat (lard)								7.00			
Skin								0.27			
Bone								11.00			
Residual and pro-cessing loss	2.68	3.62	1.0000	1.000	3.62			2.11			
Carcass	74.00	100.00						100.00			
Edible byproducts											
Heart	0.30										
Kidney	0.20										
Liver	1.20										
Tongue	0.20										
Stomach	0.40										
Melts	0.20										
Chitterlings	1.00										
Cheekmeat	0.35										
Snouts	0.20										
Ears	0.20										
Inedible and other	21.75	Priced as 1.4% of live price									
Total	100.00										

Conversion factors

Dressing percentage 74 % or 1.351 live-to-carcass

74 * 75.21 = 55.655 100/55.655 = 1.797 live-to-wholesale

100/75.21(prin. prod. subtotal) = 1.3296 carcass-to-wholesale

1.797 * 1.04 (wholesale-to-retail) = 1.87 farm-to-retail

etc.). Smoked products are included at wholesale in order to estimate the price retailers pay for the products they buy (and sell). There is an adjustment for transportation costs to the city where consumed.

Column B in the table is the breakout used by AMS for its composite pork carcass cutout series. The cutout is based on industry yields and an independent check confirmed these yields.

Column A is Column B converted back to liveweight (above the 74 percent carcass portion of the table). Byproducts will be discussed later.

Column C provides the conversions that AMS uses to convert the actual parts of the carcass to the poundage of the primals and subprimals as priced at wholesale. Some products are sold and their prices reported after being trimmed to certain specifications.

Column D indicates the conversions from specified primals as purchased to wholesale cuts as being sold currently. The primals are discussed separately:

Hams - 80 percent of hams are assumed to be deboned and the remainder bone-in or semiboneless. Of those deboned, 44 percent of the product is assumed to be boneless muscle, 22 percent trimmings, and 34 percent bone and fat trim. Water added in processing is assumed to be 20 percent. For the bone-in hams 80 percent is assumed to be product with 20 percent bone and fat trim and 15 percent water added.

Loins - 60 percent are estimated to be deboned and the rest sold as bone-in loins. The deboned breakout is 36 percent center chops, 19 percent other cuts, 26 percent trimmings, and 19 percent bone and fat. It is assumed an average of 10 percent water enhancement (pump) is added to the center chops. The bone-in loins are estimated to be 97 percent product with 10 percent pump and 3 percent fat.

Bellies - A yield of 75 percent cured bacon and 25 percent skin and fat is assumed.

Spareribs - No adjustment.

Picnics - It is assumed that 90 percent are boned out and sold as boneless picnic (72 percent chemical lean) which is later assumed as sausage. Of the remaining picnics, half are sold fresh and half smoked. The smoked has a yield of 90 percent with a 35 percent pump added. The fresh picnic yields 80 percent product. One-twentieth of this 10 percent (assumed to be trimmings) was added to the 90 percent bone-out picnic product.

Butts - 85 percent of the butts are assumed sold bone-in and the remainder sold deboned. Bone makes up 6 percent of the deboned portion.

Enhanced (water added) fresh pork is a trend that is being accepted rapidly. As the practice is new, only the loins are assumed to be pumped and at a level of 10 percent. The concept is likely here to stay, but the number of cuts and the percentage of pump will probably be higher than what has been assumed. Nevertheless, this new practice is at least partially reflected in these revisions.

Column E is the product of multiplying columns B, C, and D. Added (and shaded) is the estimate of the decrease in product

(basically trim from the column C conversions). Of this total, 3.7 percent can be separated out as 72 percent pork trimmings and 1.2 percent as 42 percent pork trimmings.

Column F shows the transfer of trimming product from the primal categories (rows in table) to the 42- and 72-percent pork trimmings and boneless picnic lines in the table. For example, in addition to pork chops, the loin also produces trimmings that are transferred down (in the table) to pork trimmings.

Column G restates, by primal, the product resulting from the previous (columns D and E) conversions and the column F trimming shifts. Column H takes the calculations one step further and breaks the primal percentages out into wholesale cuts (as divided and discussed in the primal breakout discussion for column D). The residual and processing loss includes about 11 percent bone which is pulled out leaving 2.11 percent as residual and processing loss.

Column I matches the wholesale cuts with the available retail cut prices from BLS. The list of BLS cuts in column K includes all BLS prices available for pork except for an all-pork-chop price, which is not used in order to apply the separate bone-in and boneless chop prices. Cuts were combined logically using information about the cuts, the primal source, and information about the general price level of the various cuts. For example, since the sausage price is higher than the all-other-pork price, ERS placed the 42 percent trimmings weight in the all-other-pork price weight rather than leaving it in the sausage price weight. The 42 percent trim was defatted on paper by decreasing the product's weight 40 percent which makes 70 percent trimmings. This fat removal means the weights used to multiply by cut prices add to less than 100 percent. This 42 percent trimming material in the industry would be combined with sow and boar (or other quality) pork to make fresh sausage or sausage products if all pork sales were being considered, rather than just a 51-52 percent lean hog.

Column J provides the retail cut weights adjusted to equal 100 percent (retail pound equivalent).

Byproduct Adjustment

Since price spreads are based on the equivalent of one pound of retail cuts at each level, the value attributed to byproducts in the live hog must be removed to obtain the net farm value. The byproduct percentages (table 1) are based on the previous breakout and the calculations in the consumption conversion factor article that appeared in the January 1991 ***Livestock, Dairy, and Poultry Situation and Outlook*** report. Price availability was also considered. Some of the byproducts listed as edible may be mainly sold as inedible and a few inedible prices are used. The remaining (inedible) byproducts are assumed to have a value of 1.4 percent of the live price.

These byproduct percentages, as well as all the other breakouts and assumptions, were sent to 17 reviewers for comment before being accepted for use in these revised pork spreads.

Conversion Factors

Conversion factors are presented in table 1 and table 2. They are based on a 74-percent dressing percentage (live-to-carcass), 75.21-percent cutout from carcass-to-wholesale product, and a 3.85-percent loss from wholesale-to-retail cuts. The loss from wholesale-to-retail market levels reflects

some trimming of fresh cuts and a retail shrink (loss due to spoilage, rewraps, conversion to other cuts, and pilferage) of 3 percent.

Table 2- Pork price spread conversion factors

Market levels	Conversion factor to next level	Pounds to yield one pound at: Retail	Wholesale
One pound at:			
Retail	1.000	1.000	
Wholesale	1.040	1.040	1.000
Carcass	1.330	1.383	1.330
Live animal	1.351	1.869	1.797

Hog Prices

The 5-market (once 7-markets) live price is being replaced by the national base lean hog (51-52 percent lean, .80- .99 inch backfat) carcass price multiplied by .74 to obtain the live price on a live weight basis.

Wholesale Pork Prices

Specific cut prices used for calculating the wholesale price of principal products and byproducts are obtained from AMS. Table 3 indicates the specific cuts used and where they are published. (LMW is used as the short designation for ***Livestock, Meat, and Wool Weekly Summary and Statistics***. NCMR refers to the ***Weekly National Carlot Meat Report***. AMS-Direct are prices that AMS collects for use by ERS (and possibly others) and are not published in AMS releases). All of these cuts match table 1 breakdowns fairly closely. However, a boneless fresh ham price for the designation of smoked ham boneless on table 1 was used because a smoked ham boneless price was not available. This substitution may produce a slightly lower wholesale pork composite price, but it at least reflects the boneless product if not the cost of smoking.

Retail Prices

Retail prices obtained from BLS, as indicated in column K of table 1, are multiplied by the weights shown in column J. BLS collects these prices as part of its derivation of the overall Consumer Price Index and its Consumer Price Index for Pork. While BLS uses the data it collects for CPI's, it releases prices for pork cuts (and many more products) as a service for other users. However, BLS requires a minimum number of observations before it will release the price of individual products.

Current and Revised Prices and Spreads

Table 4 compares the revised and previous prices and price spreads for pork for the last 10 months. The method for updating historical data and a proposed series will be provided in a later publication. It should be noted that other assumptions could produce a different historical series.

Prices increase at all levels in the revised series due to the move to a higher quality (leaner) hog and closer trimmed pork products, including more boneless cuts. The farm-to-retail price spread is only slightly larger, while the wholesale-to-retail portion of the spread grows larger and the farm-to-wholesale portion decreases. As discussed earlier, the wholesale value might have been a little higher if a wholesale price for smoked boneless hams were available. Regardless, the change in spreads from period to period is technically more meaningful when examining spreads than the absolute levels themselves. Use of the same price series, weights, and calculation procedures each month gives meaning to changes in the spreads, as the varying factor is price, not procedures.

The increase in the farm price is due to the use of a different live price series in the new procedure that reflects a leaner, higher cutting hog. The previous 5-market price has disappeared. The wholesale value and retail price increase is due to the use of more boneless, closer trimmed cuts that may include more service.

Summary and Conclusions

Many changes in meat merchandising, data availability, and structural and marketing practices have occurred since pork price and spread calculations were revised in 1978. Price and spread calculation procedures needed revising to reflect changes in the pork industry. Hogs have become larger and leaner with more lean muscle and produce more lean cuts. In addition, more pump is added to retail cuts (including fresh cuts), which increases yield of pounds sold at retail. More cuts are now sold boneless, which reduces yield. Fat trim is now closer, reducing yield of retail cuts. Changes in reporting of live and wholesale prices required the use of newer, more appropriate series. BLS also provides data on more boneless cuts that are used in the revised procedure.

Table 4 provides a 10-month comparison and a longer historical revised series will soon be available. Price spread data are of greater value in examining trends over time than in trying to determine the margins of firms in the channel at a given point in time.

Table 3 - Pork wholesale and byproduct value

Item	Data source	Weight	1998-- Nov. 07	Nov. 14	Nov. 21	Nov. 28	Nov. Month	1998 - - - Dec. 5	Dec. 12	Dec. 19	Dec. 26	1999- - - Jan. 2	Dec. Month
		(%carcass)											
Smoked ham, 16-19 lbs	AMS-Direct	4.40	83.00	83.50	84.00	85.00		87.00	84.00	81.50	79.50	78.00	
Fresh ham,BNLS, 4 muscle group	NCMR	10.10	102.15	93.20	85.00	94.43		116.88	118.40	118.40	77.25	85.30	
Fresh loin, BI, 1/4" trim, 13-19 lbs	LMW	8.62	82.02	76.21	75.88	85.73		80.84	65.52	66.88	68.90	81.54	
Fresh loin, BNLS, strap-off, 5-9 lbs	NCMR	4.81	157.78	142.86	154.07	159.91		150.62	127.91	122.23	135.80	155.80	
BNLS Sirloin, .75-1 lbs	NCMR	2.30	91.29	83.73	82.00	77.11		74.13	72.92	74.30	76.38	77.91	
Sliced bacon, cured, lb	AMS-Direct	11.77	152.67	150.67	148.00	147.33		146.67	146.00	145.33	144.67	143.33	
Spareribs, 3.8/DN lbs	LMW	4.04	98.00	97.00	95.00	98.00		95.00	95.00	96.00	95.00	95.00	
Fresh picnic, smkr trm, SS, boxed	NCMR	0.45	37.75	37.15	41.11	41.80		39.85	39.06	36.84	37.93	36.68	
Smoked picnics, lb	AMS-Direct	0.69	53.50	55.00	56.00	56.50		57.50	55.00	51.50	48.00	45.00	
Boston butts, 4-9 lbs, fresh, 1/4" trim	LMW	6.96	48.26	48.53	55.25	62.89		47.94	43.03	44.18	46.34	53.59	
Sausage trim, 42% fresh, combo	NCMR	5.37	11.14	11.80	12.19	11.19		11.05	10.79	8.61	6.87	10.09	
Sausage trim, 72% fresh,combo	LMW	8.04	18.55	18.68	18.63	17.72		18.34	17.02	13.24	11.68	13.97	
BNLS picnic , 72%, fresh,combo	LMW	7.66	22.50	21.33	21.00	19.94		19.63	18.02	14.60	13.00	15.55	
		75.21											
Wtd avg Principal products			60.368	57.800	57.554	59.941	58.916	60.136	57.032	56.123	52.425	56.131	56.370
(Live weight basis)			54.51202	52.19366	51.97133	54.12635	53.20084	54.3032	51.50024	50.67874	47.33955	50.68672	50.90169
		(% live)											
Skinned jowls, avg. fresh & frozen	NCMR	1.2	14.75	14.75	15.29	13.50		13.43	13.18	12.02	10.60	10.66	
Neck bones	LMW	1.1	13.00	10.00	10.00	10.00		10.30	10.50	9.00	9.00	9.00	
Feet front, toes or	LMW	0.8	19.00	19.00	19.00	19.00		18.00	16.30	14.00	14.00	12.00	
Tails	LMW	0.3	17.00	15.75	17.00	17.00		13.20	16.00	16.00	16.00	15.00	
Loose lard, PS &/or PC	LMW	5.2	18.30	18.20	17.40	16.00	17.475	15.60	15.50	15.80	16.50	17.19	16.118
Snouts, partial lean in	LMW	0.2	22.00	22.00	23.75	26.75		29.60	33.00	34.60	34.50	33.38	
Ears, square cut, lobe off, 4-5 lb	NCMR	0.2	100.33	105.00	103.00	104.00		120.00	100.00	100.75	94.00	94.00	
Hearts, slashed, domestic	NCMR	0.3	20.33	17.83	17.50	17.00		17.00	16.10	16.10	16.00	16.00	
Livers, large box, domestic	NCMR	1.2	21.00	21.00	21.00	21.00		25.00	16.25	16.25	16.25	16.00	
Tongues, green,BNLS, exp., sm. box	NCMR	0.2	53.00	53.00	53.00	53.00		53.00	53.00	53.00	53.00	53.00	
Kidneys, small box, export	NCMR	0.2	14.50	12.00	10.00	10.00		10.00	10.00	11.00	10.93	10.93	
Cheek meat, trimmed	LMW	0.4	36.30	34.80	34.00	34.00		33.81	30.40	29.20	29.00	25.19	
Choice white grease, ined.,CAF-Gul	LMW	0.4	15.80	14.10	13.50	13.50		13.50	13.50	13.50	13.50	13.50	
Chitterlings, 10 lbs	LMW	1	36.00	34.00	34.00	37.50		34.70	32.20	31.25	31.00	28.00	
Stomachs, scld.,small box, expo	NCMR	0.4	48.00	48.00	48.00	46.00		46.00	46.00	46.00	44.00	44.00	
Melts, inedible, chilled	NCMR	0.2	5.88	5.88	5.88	5.88		5.88	5.88	5.88	5.88	5.88	
Skins, belly, flat-pk, selected	LMW	0.2	24.00	25.00	28.00	28.00		24.13	23.20	25.00	25.00	25.00	
		13.5											
Wtd avg - Byproducts Sum			2.987	2.912	2.875	2.814	2.8971	2.826	2.633	2.596	2.590	2.557	2.6403
51-52 % lean hog price x .74			21.66	21.06	19.08	18.00	19.950	18.97	17.33	13.88	15.10	17.80	16.616
Inedible and other - Value is 1.4% of live price			0.30	0.29	0.27	0.25	0.28	0.27	0.24	0.19	0.21	0.25	0.23

Table 4- Comparison of revised and previous prices and price spreads for pork

Item	1998 Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	10 month Avg
						Cents per pound					
Retail price											
Revised	240.4	235.6	240.6	243.1	245.1	245.0	244.7	242.2	241.0	238.1	241.6
Previous	229.8	225.0	226.7	228.9	231.0	230.9	231.2	230.2	226.9	223.5	228.4
Difference	10.6	10.6	13.9	14.2	14.1	14.1	13.5	12.0	14.1	14.6	13.2
Wholesale value											
Revised	97.1	96.2	108.9	108.1	101.1	100.9	96.2	93.3	84.6	81.1	96.8
Previous	91.4	91.0	99.8	98.0	94.9	96.4	93.2	91.1	84.6	80.1	92.1
Difference	5.7	5.2	9.1	10.1	6.2	4.5	3.0	2.2	0.0	1.0	4.7
Net farm value											
Revised	65.6	66.5	80.4	79.9	70.3	66.9	56.4	52.1	35.0	29.3	60.2
Previous	54.3	55.7	66.3	65.8	57.6	55.4	47.9	42.0	28.1	21.8	49.5
Difference	11.3	10.8	14.1	14.1	12.7	11.5	8.5	10.1	6.9	7.5	10.8
Price spreads:											
Farm-to-retail											
Revised	174.8	169.1	160.2	163.2	174.8	178.1	188.3	190.1	206.0	208.8	181.3
Previous	175.5	169.3	160.4	163.1	173.4	175.5	183.3	188.2	198.8	201.7	178.9
Difference	-0.7	-0.2	-0.2	0.1	1.4	2.6	5.0	1.9	7.2	7.1	2.4
Wholesale-to-retail											
Revised	143.3	139.4	131.7	135.0	144.0	144.1	148.5	148.9	156.4	157.0	144.8
Previous	138.4	134.0	126.9	130.9	136.1	134.5	138.0	139.1	142.3	143.4	136.4
Difference	4.9	5.4	4.8	4.1	7.9	9.6	10.5	9.8	14.1	13.6	8.5
Farm-to-wholesale											
Revised	31.5	29.7	28.5	28.2	30.8	34.0	39.8	41.2	49.6	51.8	36.5
Previous	37.1	35.3	33.5	32.2	37.3	41.0	45.3	49.1	56.5	58.3	42.6
Difference	-5.6	-5.6	-5.0	-4.0	-6.5	-7.0	-5.5	-7.9	-6.9	-6.5	-6.0
Farmer's share (percent)											
Revised	27	28	33	33	29	27	23	22	15	12	25
Previous	24	25	29	29	25	24	21	18	12	10	22
Difference	3	3	4	4	4	3	2	4	3	2	3